

What is claimed is:

1. An optical fiber unit for air blown installation into a tube, comprising:
at least one optical fiber having core layer and clad layer;
5 a protective layer coated on a surface of the optical fiber; and
a protrusion made of polymer resin and formed on an outer surface of the protective layer in a banded shape.
2. An optical fiber unit for air blown installation according to claim 1,
10 wherein the protrusion is formed discontinuously.
3. An optical fiber unit for air blown installation according to claim 1,
further comprising a coating layer coated on the surfaces of the protrusion and the protective layer and made of one selected from the group consisting of glass, ceramic
15 and polymer.
4. An optical fiber unit for air blown installation according to claim 1,
wherein the protrusion has a spiral, waved or sine-waved pattern.
- 20 5. An optical fiber unit for air blown installation according to claim 1,
wherein the protrusion has a sectional shape of triangle, semicircle, arc, trapezoid, or unevenness.

6. An optical fiber unit for air blown installation according to claim 1,
wherein the protective layer includes a buffer layer surrounding at least one optical fiber,
and a sheath surrounding the buffer layer.

5 7. An optical fiber unit for air blown installation according to claim 6,
wherein the buffer layer has Young's modulus and hardness smaller than the sheath.

8. An optical fiber unit for air blown installation according to claim 6,
wherein an intermediate layer is provided between the buffer layer and the sheath in
10 order to damp external impact.

9. An optical fiber unit for air blown installation according to claim 8,
wherein Young's modulus and hardness of the intermediate layer are smaller than those
of the sheath and larger than those of the buffer layer.

15 10. An optical fiber unit for air blown installation according to claim 1,
wherein the protrusion is made of the same material as the protective layer.

20 11. An optical fiber unit for air blown installation according to claim 1,
wherein the optical fiber includes a multi-core ribbon-type optical fiber, and the
protective layer has a circular sectional shape.

12. A method for manufacturing an optical fiber preform for air blown

installation, comprising:

passing at least one optical fiber having core layer and clad layer through a hollow extrusion dice in which a predetermined groove is formed on an inner surface thereof; and

5 forming a protrusion having a banded shape on the outer surface of the optical fiber by supplying polymer resin on an outer surface of the optical fiber so that.

13. A method for manufacturing an optical fiber unit for air blown installation according to claim 12, in the protrusion forming step,

10 wherein a protective layer is formed on the outer surface of at least one optical fiber, and the protrusion is formed on an outer surface of the protective layer.

14. A method for manufacturing an optical fiber unit for air blown installation according to claim 12, in the protrusion forming step,

15 wherein the protrusion is formed in a spiral, waved, or sine-waved pattern by rotating the extrusion dice around the optical fiber or rotating the optical fiber which is passing through the extrusion dice.

15. A method for manufacturing an optical fiber unit for air blown installation according to claim 12, further comprising the step of coating any of glass, ceramic and polymer resin on the surface of the optical fiber having the protrusion.

16. A method for manufacturing an optical fiber unit for air blown

installation according to claim 12, in the protrusion forming step,

wherein the protrusion is formed discontinuously by supplying the polymer rein
on the outer surface of the optical fiber discontinuously.

5 17. A method for manufacturing an optical fiber unit for air blown
installation, comprising:

forming a protrusion having a banded shape on an outer surface of at least one
optical fiber having core layer and clad layer by supplying polymer resin through a
nozzle on the outer surface of the optical fiber while moving the optical fiber along a
10. longitudinal direction thereof.

18. A method for manufacturing an optical fiber preform for air blown
installation according to claim 17, in the protrusion forming step,

wherein the protrusion is formed in a spiral, waved, or sine-waved pattern by
15 rotating the nozzle around the optical fiber or rotating the optical fiber.

19. A method for manufacturing an optical fiber unit for air blown
installation according to claim 17, further comprising the step of coating any of glass,
ceramic and polymer resin on the surface of the optical fiber having the protrusion.

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20. A method for manufacturing an optical fiber unit for air blown
installation according to claim 17, in the protrusion forming step,

wherein the protrusion is formed discontinuously by supplying the polymer rein

on the outer surface of the optical fiber discontinuously.